REMARKS/ARGUMENTS

Claims 1-46 and 73-81 are pending in this application. Claims 14, 15, 19, 20, 39-42, 45, 46, and 76 have been withdrawn by the Examiner from further consideration in this application as being directed to a non-elected invention. Claims 1-13, 16-18, 21-38, 43, 44, 73-75 and 77-81 are, thus, presently under examination. These claims have all been rejected. Reconsideration of the application is respectfully requested.

Rejection Under 35 U.S.C. §103

The Examiner continues to maintain the rejection under 35 U.S.C. 103 of claims 1-13, 16-18, 21-38, 43-44, 73-75 and 77-79 (now also including added claims 80-81), over Biella et al. (Journal of Catalysis 206, 242-247, 2002) in view of USP 4,985,553 of Fuertes et al. and Biella et al. (Catalysis Today 72, 43-49, 2002) for the reasons set forth at pp. 3-5 of the Office Action. The rejection is respectfully traversed.

The features of the presently claimed method(s), insofar as they serve to distinguish the pending claims over the combination of prior art relied upon by the Examiner as a basis for the present rejection, have been extensively discussed in applicants' response filed February 18, 2009. Those remarks are expressly incorporated herein by reference. The following remarks are provided to address the Examiner's responses to applicants' previous arguments, which responses are set forth at pp. 5-6 of the Office Action.

On p. 6 of the Action the Examiner indicates that the teaching of Biella et al. (in *Catalysis Today*), i.e., to the effect that activated carbon is a superior catalyst, is based in particular on the showing provided, e.g., in Table 9 on p. 48 of the subject reference, illustrating the effect of such catalyst in the oxidation of 1-propanol. In fact, however, Biella et al. (*Catalysis Today*) contains a substantial amount of additional disclosure tending to teach or suggest to one of at least ordinary skill in this art that activated carbon supported catalysts are superior in their performance over those, such as are now claimed, which utilize a metal oxide support. See, e.g., the data set forth in Table 3 on p. 46 demonstrating that the selectivity of TiO_2 catalysts (i.e., metal oxide supported catalysts) used in the oxidation of 1,3-propandiol is only 95%, whereas the selectivity of activated carbon supported catalysts for the same purpose is 100%. Furthermore, Table 5 on p. 47 of the reference sets forth the results achieved in the oxidation of

diethylene glycol with TiO_2-based (i.e., metal oxide based) and carbon-based carriers, respectively. The Table clearly shows that the metal oxide supported catalysts (i.e., with TiO_2 as a support) have a lower selectivity than catalysts based on carbon. That is, the percentage of the monoacid obtained is shown as always being higher in the case of reactions carried out with carbon supported catalysts.

Thus, Biella et al. presents more than just one 'isolated' example demonstrating the superiority of carbon supported catalysts. Rather, the entire focus of the teaching provided by the reference is toward the use of carbon supported catalysts and away from the substitution of such catalysts with metal oxide supported catalysts, i.e., the opposite of what is recited in applicants' claims presently under examination. This teaching thus runs entirely counter to applicants' claimed method which requires the use of such metal oxide supported catalysts. In summary, therefore, whereas applicants claim a method of using a metal oxide supported catalyst, the *Catalysis Today* reference teaches mainly that carbon supported catalysts provide significantly improved performance over such metal oxide supported catalysts. Applicants, therefore, respectfully submit that the disclosure contained in Biella et al. in *Catalysis Today*, can NOT be said to teach or even suggest the use of metal oxide based catalysts, as recited in applicants' claims, to anyone having an ordinary level of skill in the relevant art.

Further to the above, the Examiner's attention is respectfully directed to the Y. Onal et al. reference, presently of record. The reference was first cited (and a copy supplied in the German language) in an Information Disclosure Statement filed on November 4, 2005. Thereafter, an English language translation of the reference was submitted on April 8, 2009 for the consideration of the Examiner. The reference teaches that activated carbon is preferable as the carrier material in supported gold catalysts over transition metal oxides for the oxidation of glucose, in particular in connection with impregnation techniques or gold sols (see, e.g., lines 18-20 on the second page of the English translation provided on April 8, 2009).

Further disadvantages of metal oxide carriers in platinum and/or palladium catalysts are found in additional prior art not yet of record in this case. For example, Venema, et al., "Platinum-catalyzed oxidation of aldopentoses to aldaric acids", *Journal of Molecular Catalysis* 77 (1992) pp. 75-85, describes a significant degree of leaching of platinum from the catalysts in the oxidation of pentoses when aluminum oxide supported platinum catalysts are used (see p. 81, line 13). One working in this field would be well familiar with the fact that such leaching is

disadvantageous and the reference thus clearly would teach such a skilled individual to avoid substituting metal oxide carriers for carbon carriers. A copy of the Venema et al. article is provided herewith for review by the Examiner and the reference is, additionally, listed on the form appended to this response. The Examiner is requested to make the reference of record in this case by initialing and dating the attached form and returning it to applicants' representative with the next Communication concerning this application. Venema et al., thus, clearly supports the teaching away provided in Biella et al. (*Catalysis Today*) regarding the use of metal oxide supported catalysts.

In sum, applicants respectfully submit that the prior art, i.e., Biella et al. and Venema et al., does not simply describe metal oxide based catalysts as "somewhat inferior" to carbon supported catalysts. Rather these references actually teach away from the use of such metal oxide based catalysts by noting, not only their diminished performance, but also various disadvantageous conditions (e.g., leaching) ascribed to the use of such metal oxide based catalysts. Applicants respectfully submit, moreover, that the remaining references included in the combination relied upon to reject applicants' claims do not supply the element(s) of the claimed method that are missing from Biella et al. (*Catalysis Today*). Thus, applicants submit that the present claims are NOT obvious, whether over Biella et al. (*Catalysis Today*) taken alone, or in combination with the remaining cited references.

In applicants' estimation, the presently claimed method relating to the C1 selective oxidation of sugars with the use of a metal oxide supported gold catalyst represents a pioneering invention. Applicants are, furthermore, aware, that the Biella et al. research group was the first research group in the world to utilize gold catalysts in the oxidation of sugars. In so doing, moreover, they utilized for such oxidation carbon supported gold catalysts, in accordance with the teachings and practice of the prior art. Clearly, therefore, the cited art would not teach or suggest to one having ordinary skill in this art to substitute a carbon supported catalyst with a metal oxide supported catalyst in the selective oxidation of a carbohydrate, e.g., an oligosaccharide.

Applicants, next, seek to address the Examiner's comments at the bottom of p. 5 of the Office Action. As indicated therein, applicants pointed out at p. 13 of their previous response filed February 18, 2009 that Example 3 of the present application provides evidence that the metal oxide supported catalysts taught and claimed for use in applicants' method, have a

significantly greater durability (i.e., 'life cycle') than the carbon supported catalysts disclosed in Biella et al. (*Catalysis Today*). The Examiner, however, in her "Response to Arguments" on p. 5 of the Office Action states, "... [i]nstant Example 3, cited by Applicant, only provides data for the durability of 0.5% Au/TiO_2 catalyst, which is not commensurate in scope with the claims."

In response, applicants are providing herewith a Declaration Under 37 C.F.R. of co-inventor Dr. Alireza Haji-Begli, which includes additional evidence of the longer life advantage offered with the use of the claimed carbon supported catalysts. This evidence is in the form of two new examples evidencing the long term stability of catalysts according to the presently claimed method wherein the catalysts are 0.3% and 1.0% Au/Al_2O_3 catalysts. The examples provided in the declaration, then, are believed to further support applicants' contention that the greater long term stability of catalysts as recited for use in applicants' claimed method, i.e., versus the more limited expected life expectancy with carbon supported catalysts (as taught in Biella et al. (*Catalysis Today*) offers significant evidence of the non-obviousness of the claims presently under rejection. Applicants respectfully submit that the evidence provided in Example 3 of the present application (i.e., of improved performance by 0.5% Au/TiO_2 catalysts) taken in conjunction with that set forth in the appended 1.132 Declaration (showing improved stability and effectiveness of 0.3% and 1.0% Au/Al_2O_3 catalysts) should lead the Examiner to the inescapable conclusion that the claimed method, which utilizes such catalysts, is not obvious over the disclosure of the prior art combined to reject the pending claims.

More particularly, Table 1 provided with the declaration of Dr. Haji-Begli evidences the substantially constant level of activity of thirty (30) batches of a 0.3% (by weight) Au/Al_2O_3 catalyst, whereas Table 2 provides the same type of information with regard to a 1% (by weight) Au/Al_2O_3 catalyst, both of which catalysts fall within the scope of the presently claimed method. As indicated in Example 3 provided in applicants' specification (see p. 46) the catalysts were tested in the form of repeated batch tests, wherein each test involves a glucose oxidation carried out with the use of the subject catalyst. The Examiner is respectfully requested to take the data so provided into account as further evidence of the surprising and unexpected improvement offered with the use of catalysts as recited in applicants' claims.

Based on the arguments set forth above and in consideration of the evidence provided in Example 3 of the present application taken together with that contained in the appended

declaration under 37 1.132 of Dr. Haji-Begli, the Examiner is respectfully requested to reconsider and withdraw the rejection under 35 U.S.C. 103 of applicants' claims.

THIS CORRESPONDENCE IS BEING SUBMITTED ELECTRONICALLY THROUGH THE PATENT AND TRADEMARK OFFICE EFS FILING SYSTEM ON June 25 2009.

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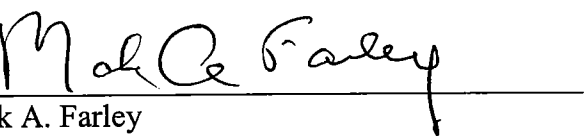
Respectfully submitted,



Mark A. Farley
Registration No.: 33,170
OSTROLENK FABER LLP
1180 Avenue of the Americas
New York, New York 10036-8403
Telephone: (212) 382-0700